

SUSTAINABILITY COUNCIL MEETING

AGENDA

Tuesday – April 30, 2019

NSRC – Room # 358

1:30pm – 3:00pm

Refreshments will be served

Introduction – Evan H. DeLucia

1. iCAP Updates
 - ❖ Awards and Designations
 - ❖ Best Management Practices for U of I farms
 - ❖ iCAP Integration with Research
 - ❖ iCAP Integration with Education
 - ❖ 2020 iCAP Timeline

2. iCAP Goals and Clean Energy
 - ❖ Overview of iCAP Energy Goals
 - ❖ Bridging the Gap in Our Renewable Energy Portfolio
 - ❖ Solar Farm 2.0 – Status Update
 - ❖ Off-Campus Solar – New Opportunity for Leadership
 - ❖ Discussion on Next Steps

Sustainability Council

Professor Evan H. DeLucia

Baum Family Director of the Institute for Sustainability, Energy, and Environment

University of Illinois at Urbana-Champaign

April 30, 2019



INSTITUTE FOR SUSTAINABILITY, ENERGY, AND ENVIRONMENT



2018-19 SUSTAINABILITY COUNCIL MEMBERS

- **Chair:** Robert J. Jones, Chancellor, University of Illinois at Urbana-Champaign
- **Vice Chair:** Evan H. DeLucia, Baum Family Director of iSEE
- Andreas Cangellaris, Vice Chancellor for Academic Affairs and Provost
- Barry Benson, Senior Vice President for Development
- Danita Young, Vice Chancellor for Student Affairs
- Susan Martinis, Vice Chancellor for Research
- Rashid Bashir, Dean, College of Engineering
- Jeffrey Brown, Dean, Gies College of Business;
- Kim Kidwell, Dean, College of Agricultural, Consumer, and Environmental Sciences
- Feng Sheng Hu, Dean, College of Liberal Arts & Sciences
- Mohamed Attalla, Executive Director, Facilities & Services
- Matthew Tomaszewski, Associate Provost for Capital Planning
- Bettina Francis, Chair, Senate Executive Committee
- Walter Lindwall, President, Illinois Student Government (ISG)
- Adrian Chendra, Chair, Student Sustainability Committee (SSC)
- Jonah Messinger, Co-Chair, Student Sustainability Leadership Council (SSLC)
- Joey Kreiling, Co-Chair, Student Sustainability Leadership Council (SSLC)
- **Non-voting attendee:** Ximing Cai, iSEE Associate Director for Campus Sustainability and iCAP Working Group (iWG) Chair
- **Secretary:** Jenny Kokini, iSEE Managing Director
- **Invited Participants:** Morgan White, Associate Director of F&S, Sustainability; and Professor Scott Willenbrock

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 - Awards and Designations
 - Best Management Practices for U of I farms
 - iCAP integration with Research
 - iCAP integration with Education
 - 2020 iCAP timeline
2. iCAP Goals and Clean Energy
 - Overview of iCAP Energy Goals
 - Bridging the Gap in Our Renewable Energy Portfolio
 - Solar Farm 2.0 – status update
 - Off-campus Solar – New opportunity for leadership
 - Discussion on next steps

Awards and Designations



- **Second Nature Climate Leadership Award**
 - Recognized as Second Nature's most sustainable signatory
 - Result of commitment to sustainability in facilities, research, and education



- **AASHE STARS Gold – Best in Big Ten**
 - In latest report, score of 72.83 (up from 66.93)
 - Factors in score include sustainability courses, facility upgrades, and innovative research opportunities like the Energy Farm

BMPs for U of I Farmland

SWATeam/iWG recommendation:

The iWG recommends that the Dean of ACES charges a committee to develop a management plan (as described by the SWATeam) to promote sustainable practices on South Farms. Committee should include Farm Managers, faculty experts including ACES, PRI and water scholars, and students. The plan should include the assessment of the current status, evaluation of operational and financial impacts, and impediments to Best Management Practices.

ACES Dean Kidwell agreed to charge a committee including members from ACES and other units

- For non-research farmland
- 17,000 acres throughout state of Illinois
- Inventory current practices, suggest BMPs to implement
- Charge letter in progress

iCAP and Research

- **Living Lab Seed Grant program**
 - Using iCAP projects as testbeds for major proposal development
 - Seven total projects funded so far
- **Green Labs Committee to be charged by Jan Novakofski**
 - Inventory of facilities (e.g. the ventilation systems), resources (energy and water) uses, and material flows in research areas, animal spaces, and teaching labs
 - Identification and prioritization of methods and procedures for the research community to support iCAP implementation
 - DeLucia and Cai met with Novakofski to prepare a scope and charge for the Green Labs Committee

iCAP and Education

- **Education and Outreach Events**
 - Numerous campus workshops and Earth Week lectures
 - iSEE Congress “Sustainability Justice” — Sept. 24-25, 2019
- **Levenick Endowment for Sustainability Leadership**
 - Gift of \$3.5 million for an endowment with two parts
 - The Levenick Sustainability Chair Fund creates an endowed chair in Natural Resources and Environmental Science
 - The Levenick Resident Scholars in Sustainability Fund creates a resident scholars program based in iSEE

2020 iCAP Timeline

- **Current Efforts**

- Gathering feedback from SWATeams, students, and stakeholders on the 2015 iCAP
- Creating a comprehensive evaluation document

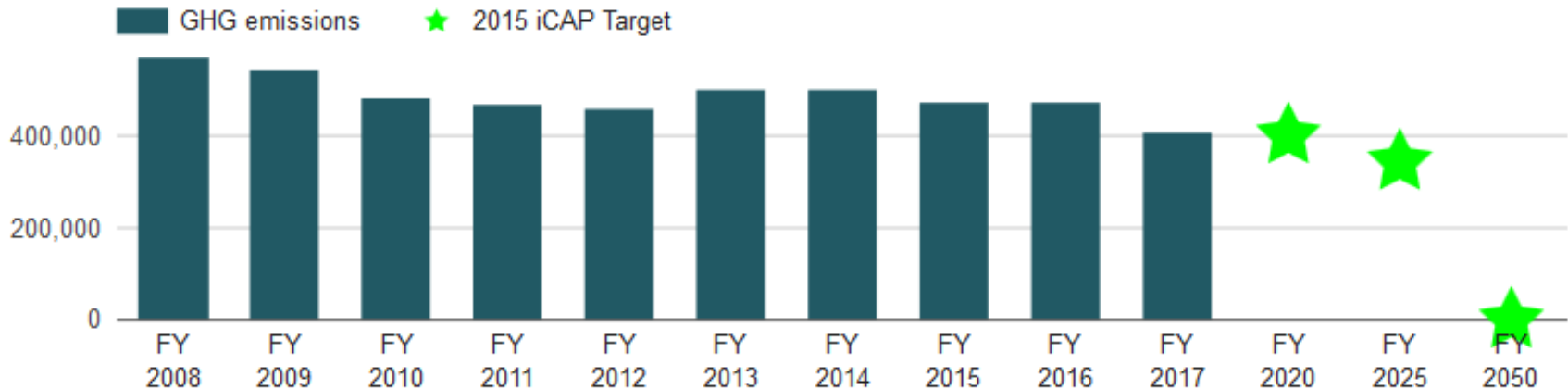
- **Anticipated Timeline for Future Efforts**

- Summer 2019: Outline skeleton and structure of 2020 iCAP
- Fall 2019: Preparation of first draft of 2020 iCAP
- Spring 2020: Iterative revisions with campus stakeholders
- Summer 2020: Review by senior administration and final revisions
- September 2020: Official Signing of 2020 iCAP

iCAP Goals and Clean Energy

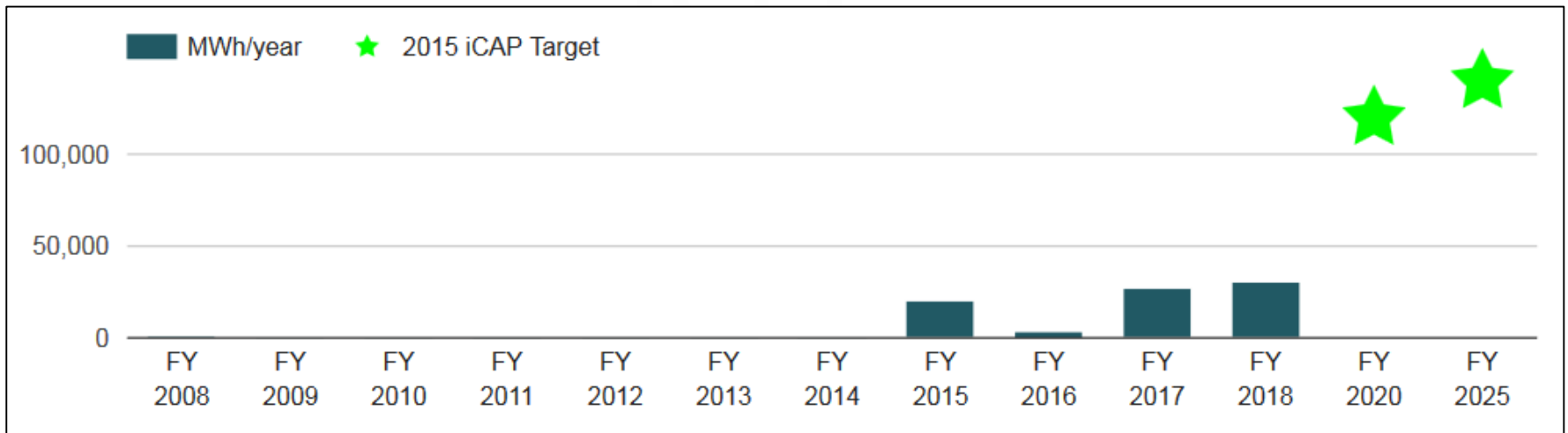
1. **Review of iCAP Energy Goals**
2. **Solar Farm 2.0 – Status Update**
3. **Solar Farm 3.0 (off campus) – new opportunity**

Review of iCAP Goals

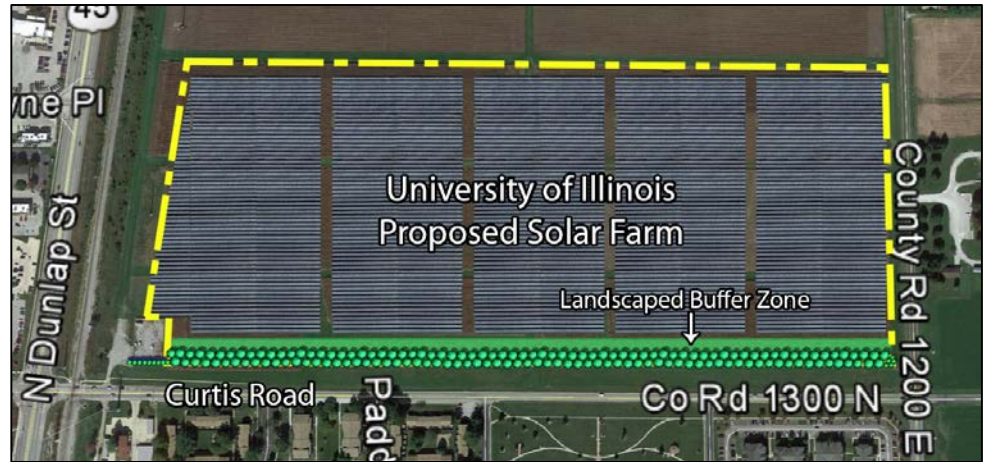


- iSEE reports our carbon footprint annually to Second Nature.
- It includes scope 1, 2, and 3 greenhouse gas emissions (GHG) in terms of carbon dioxide equivalent (CO₂e).
- Since FY08, we have reduced GHG emissions by 161,981.3 tons per year, which is a 28% reduction.

iCAP Clean Energy Goals



Solar Farm 2.0 Status Update



- Received 19 proposals on April 10, 2019
- Focused on 20-year, Bid 2 = purchasing power and keeping the Renewable Energy Certificates (RECs)
- Evaluation Committee interviewing four vendors with the top five proposals next week (May 8-9)
- Price will be around \$61/MWh, including the end of term costs
[Compared to \$196/MWh from Solar Farm 1.0 in 2015]
- Fall 2019: Anticipated Construction Start
- Summer 2020: Anticipated Commercial Operation Date

Evaluation Assumptions

AEI Analysis assumed:

- Sunshine hours of future years will match FY17, hour by hour
- Wind power production will remain the same as FY17, hour by hour
- Blue Waters will be discontinued so the total load will drop by 10 MW
- The remaining campus electrical demand will remain the same as in FY17, hour by hour



Impact of Solar Farm 2.0

- The analysis is for an on-campus 12 MW solar farm producing 18,063 MWh/year.
- If Solar Farm 2.0 costs \$61/MWh, then next year would cost ~ \$43,350/year more.
- We would expect campus costs to breakeven if proposed price is less than \$58.60/MWh.
- Solar Farm 2.0 will reduce the carbon footprint by about 10,000 tons/year.

Off-Campus Solar — Justification

Why Off-Campus Solar?

- Aspiration: 100% of purchased electricity from renewables
 - Only Stanford & MIT have achieved this
- Need additional 150,000 MWh/yr
 - Cannot generate this much on campus

Why Now?

- Investment Tax Credit (30%) through 2019
 - Compare to 26% through 2020, 22% through 2021, 10% thereafter
- Large solar farms under development throughout the state
 - Future Energy Jobs Act (2017) provides some state funding
- Prices comparable to grid electricity
 - 20-year fixed price hedges electricity inflation (~2%/yr)

Off Campus Solar — Benchmarking

On-Campus Solar Farms

- UC Davis 16.3 MW
- Illinois (current) 5.9 MW
- *Illinois (planned) 16 - 18 MW*
- Colorado State 5.3 MW
- Princeton 5.3 MW

Off-Campus Solar Farms

- Stanford 155 MW
- UC System 80 MW
- MIT 60 MW
- *Illinois 55 MW*
- George Washington 53 MW
- Georgetown 32 MW

Option A: Importing Power

- The analysis is for an off-campus 60 MW solar farm
 - producing 91,850 MWh/year.
- If Solar Farm 3.0 costs \$33/MWh, then
 - next year would cost ~ \$2,395,448/year more.
- If Solar Farm 3.0 costs \$38/MWh, then
 - next year would cost ~ \$2,854,689/year more.
- Solar Farm 3.0 would reduce the carbon footprint by
 - about 30,700 tons/year.
- **Not recommended**

Option B: Financial Transaction

The analysis is for buying and selling solar power from an off-campus private developer, up to 100% of purchased electricity.

Pros

- Lowers carbon intensity of regional grid
- Developer needs commitments from large buyers to proceed
- No transmission and distribution fees
- No operational implications for Abbott Power Plant
- If we do not keep the RECs, campus can claim “The University of Illinois has a long-term Power Purchase Agreement with an Illinois Solar Farm. The RECS are sold to the Illinois Power Agency to help satisfy the Illinois Renewable Portfolio Standard.”
- If we keep the RECs, campus can claim the use of an additional 150,000 MWh/year of clean energy.

Option B: Financial Transaction

Pros - continued

- Provides a hedge against future electricity price inflation.
 - Per US Energy Information Agency (EIA), average rate of inflation for commercial electricity prices over the past 58 years is 2.60%/year.
 - From 2012 to 2018, campus purchased electricity prices have an average rate of inflation of 2.2%/year.
- The average price on campus for electricity purchased from the grid is calculated as \$32.68/MWh for FY17 or \$34.56/MWh for CY18.

Option B: Financial Transaction

Cons

- Financial savings are not guaranteed
 - Electricity prices are difficult to predict.
 - Solar Farm 1.0 cost \$196/MWh, but Solar Farm 2.0 is only \$61/MWh.
 - There are additional transaction costs in addition to transmission and distribution.
 - The calculated average cost could be different, depending on location of off-campus site
- Anticipated off-campus solar pricing does not include Renewable Energy Certificates (RECs).
 - Both MIT and Stanford are keeping the RECs to claim they are using solar energy.
 - Without the RECs, it does not contribute to campus clean energy goals or campus carbon footprint reduction.
- Lack of liquidity in Electricity Futures market.
- Statutory and Regulatory restrictions/limitations may exist. Derivative use policy?

Recommendation

Confirm policy

**Investigate
feasibility of
financial
transaction**